BEFORE

THE PUBLIC SERVICE COMMISSION OF

SOUTH CAROLINA

DOCKET NO. 92-003-E - ORDER NO. 92-215

MARCH 31, 1992

IN RE: Adjustment of Base Rates for Fuel Costs for Carolina Power and Light Company.	)))	ORDER APPROVING BASE RATES FOR FUEL COSTS

This matter is before the Public Service Commission of South Carolina (the Commission) on the review of the cost of fuel used in electric generation by Carolina Power and Light Company (CP&L or the Company) to provide service to its South Carolina retail electric customers. The procedure followed by the Commission, as set forth in S.C. Code Ann. §58-27-865 (Supp. 1991), provides for a six month review of an electric utility's fuel costs. The review in this case is from October 1991 through March 1992.

At the hearing on March 17, 1992, William F. Austin, Esquire, and Len S. Anthony, Esquire, represented the Company; Nancy V. Coombs, Esquire, represented the Intervenor the Consumer Advocate for the State of South Carolina (the Consumer Advocate); and Gayle B. Nichols, Staff Counsel, represented the Commission Staff (Staff). Although Nucor Steel, a Division of Nucor Corporation, intervened in the proceeding, it did not pre-file testimony or participate at the hearing. W.A. McElveen appeared at the hearing as a Protestant. The record before the Commission consists of the

testimony of five witnesses on behalf of the Company, three witnesses on behalf of the Commission Staff (Staff), the testimony of Mr. McElveen,[1] and 10 exhibits.[2]

Based upon a thorough consideration of the evidence in the record and the applicable law, the Commission makes the following findings of fact and conclusions of law.

FINDINGS OF FACT

1. The record of this proceeding indicates that for the period from August 1991 through December 1991, the Company's actual total fuel costs for its electric operations amounted to $225,377,522.[3] Hearing Exhibit 9. This figure was uncontroverted.

2. Staff witness A. R. Watts reviewed and compiled a percentage generation mix statistical sheet for the Company's fossil, nuclear, and hydroelectric plants for August 1991 through December 1991. The fossil generation ranged from a high of

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1. Mr. McElveen's comments were not directly relevant to the issues in the proceeding. However, the Commission has taken his comments under consideration for other purposes.

2. Upon agreement of the parties, CP&L did not present witnesses Larry L. Yarger and David R. Nevil and the Staff did not present witness Jacqueline R. Cherry. The pre-filed testimony of these three witnesses was, however, placed in the record and their exhibits were admitted as Hearing Exhibits 1, 2, and 9, respectively.

3. Because information concerning outages during the period under review is not available until approximately two months after the hearing, the Commission usually considers the actual data from the two months prior to the period under review and the following four months. However, in order to facilitate discovery, in this proceeding, the parties agreed to consider actual data from August 1, 1991 through December 31, 1991 and estimated data for the months of January through March 1992.

55% in September 1991 to a low of 46% in August 1991. The nuclear generation ranged from a high of 52% in August and October 1991 to a low of 44% in September 1991. The percentage of generation by hydro ranged from 1% to 2% for this period. Hearing Exhibit 10, p. 11.

3. According to Company witness Roland M. Parsons, CP&L's larger fossil units, Roxboro Units 2, 3, and 4 and Mayo Unit 1, operated at equivalent availabilities of 82.7%, 91.2%, 97.4%, and 92.5%, respectively. He testified that CP&L's fossil steam system achieved an equivalent availability of 91.8%. Mr. Parsons explained that the most recently published North American Electric Reliability Council (NERC) average equivalent availability for coal fired plants was 81.6%. Staff witness A.R. Watts considered the fossil unit outage report submitted by the Company and found no problem areas. According to Hearing Exhibit 10, p. 12, the cost of CP&L's fossil fuel averaged approximately $.02 per kilowatt-hour.

4. Witness Parsons testified that the Company's nuclear system operated at a capacity factor of over 78% for the period August through December 1991 and provided in excess of 8.8 billion kilowatt-hours of generation. This represented 51% of the Company's generation for this period even though nuclear plants comprise less than 32% of the Company's installed generating capacity. Hearing Exhibit 10, p. 12, indicates that the cost of CP&L's nuclear fuel averaged from $.0052 to $.0057 per kilowatt-hour. During the period, Brunswick Unit 1 achieved a capacity factor of 90.7%, Brunswick Unit 2 achieved a capacity

factor of 25.5%, Harris Unit 1 achieved a capacity factor of 99.6%, and Robinson Unit 2 achieved a capacity factor of 95.6%.[4]

5. Company witness Murray Selman testified that using the most recently published NERC data, the average capacity factor for the nuclear industry as a whole, weighted to reflect the Company's ratio of boiling water reactors and pressurized water reactors, are 60.31% for boiling water reactors and 65.98% for pressurized water reactors. Selman testified that CP&L's performance exceeded that of the industry.

6. During the period from August 1991 through December 1991 coal suppliers delivered 3,324,714.19 tons of coal at a weighted average received cost per ton of $47.72. The audit of the Company's actual fuel procurement activities by Staff witness Jacqueline Cherry demonstrated that the average monthly received cost per ton varied from $52.43 in December 1991 to $45.19 in September 1991.

7. Company witness Larry L. Yarger testified that the Company's fuel procurement practices and procedures were reasonable. The Staff conducted an extensive review and audit of the Company's fuel purchasing practices and procedures for the subject period. Staff witness Cherry testified that the Company's fuel costs were supported by the Company's books and records.

8. The record of this proceeding indicates that a comparison of the Company's fuel revenues and expenses for the period August

4. Brunswick Unit 2 was out of service for scheduled refueling and other maintenance during a portion of this period.

1991 through December 1991 produces an over-recovery of $4,253,687. After taking into consideration a projected under-recovery of $503,388 for the month of January 1992 and an over-recovery of $1,422,509 for the months of February and March 1992, and the Commission's disallowances of $168,257 from Order No. 91-636 (August 6, 1991) and, $3,179,001 from Order No. 91-819 (September 30, 1991),[5] the Company's cumulative over-recovery is $5,172,808.

9. The Company projected that its fuel costs and system sales for April 1992 through September 1992 would yield an average cost per kilowatt-hour of 1.557 cents. Adding to this the expected over-recovery as of the end of March 1992, and divided by the projected South Carolina retail kilowatt-hour sales from April 1992 through September 1992 produces a base fuel component of 1.377 cents. However, Company witness David R. Nevil testified that he recommended the Commission continue the current fuel factor of 1.375 cents for the April 1992 through September 1992 period. Nevil explained that his 1.375 cents recommendation was in the interest of rate stability.

10. Staff witness Watts testified that if the fuel factor was set at 1.375 cents per kilowatt-hour, CP&L would have an estimated under-recovery of $74,168 based upon projected sales and fuel cost. Watts explained that his recommendation was in keeping with the fuel statute's admonition to allow utilities to recover prudently

5. Order No. 91-636, issued in Docket No. 91-3-E, addressed the Company's Spring 1991 fuel proceeding and Order No. 91-819, issued in Docket No. 91-4-E, addressed the Company's Fall 1991 fuel proceeding.

incurred fuel cost "in a manner that tends to assure public confidence and minimize abrupt changes in charges to customers."

11. During the period under review, CP&L had six (6) scheduled and/or forced outages at its four nuclear plants. The Company asserted that each of the outages were prudently incurred. Staff witnesses Gary E. Walsh and A. R. Watts testified that two of the six outages were the result of unreasonable actions by the Company[6] but because of the Company's overall plant performance during the period, they did not recommend that the excess fuel replacement costs associated with the outages be disallowed.

Robinson Unit 2 Outage - August 16 - 18, 1991.

12. Company witnesses Parsons and Selman testified that from August 16 to August 18, 1991, Robinson Unit 2 was removed from service and maintained in hot shutdown for repair of the reactor protection instrumentation. The witnesses explained that in 1988, Westinghouse had made modifications in the reactor protection instrumentation and that the modifications caused CP&L's reactor protection circuitry response time to exceed the response time allotted by the plant's technical specifications.

Selman testified that CP&L reviewed the design criteria of the reactor protection circuitry in 1991 and determined that the system was not in full compliance with the plant's technical

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6. During the period under review Brunswick Unit 2 was removed from service for scheduled refueling and maintenance. Because the unit was not returned to service by December 31, 1991, CP&L and Staff witnesses recommended that that outage be considered during the Company's next fuel proceeding. The Consumer Advocate did not object to this recommendation.

specifications. During this review, CP&L discovered that the modifications affected the reactor protection instrumentation response time. Accordingly, CP&L removed Robinson Unit 2 from service to eliminate six capacitors that were not required after the Westinghouse modifications.

Parsons and Selman testified that Westinghouse had not notified CP&L that these capacitors should have been removed during the 1988 modifications. Selman noted that the capacitors had been in place since 1988 and had not contributed to any loss of generation until CP&L shut the unit down on August 16, 1991. Selman stated that, in his opinion, the Company had exhibited "great diligence and acted prudently and conservatively when it reviewed the design criteria of the system in 1991." Selman and Parsons testified that Westinghouse was the expert in the reactor protection system modification and that CP&L acted reasonably when it relied on Westinghouse to provide it with all necessary information.

Staff witness Watts testified that it was his opinion that CP&L had acted unreasonably by placing excessive reliance on Westinghouse for completeness of its modifications to the system circuitry. He testified that CP&L's initial reviews of the modifications were insufficient because they failed to identify the need to remove the capacitors. Watts noted that his conclusion was the same as that reported by the Nuclear Regulatory Commission (NRC).

Brunswick Unit 1 Outage - October 15 - 21, 1991.

13. Staff witness Walsh testified that the October 15 - 21, 1991, outage at Brunswick Unit 1 was the result of unreasonable action on behalf of CP&L. Walsh testified that on August 22, 1991, CP&L requested that the NRC grant it a one-time extension of Brunswick's plant specifications and allow it to increase its out-of-service time [Limiting Condition for Operation (LCO)] for diesel generators No. 3 and No. 4 from seven (7) to fourteen (14) days. This request would allow Brunswick Unit 1 to continue operation with diesel generator No. 3 out of service for fourteen (14) days[7]. According to its request, CP&L believed that the requested fourteen 14 day LCO would allow more time for comprehensive maintenance activities than could be performed under two separate 7 day LCOs. In addition, CP&L believed the extension would reduce the total out-of-service time for the diesel generators, thereby increasing diesel generator availability and decreasing reactor core damage probability.

On October 1, 1991, diesel generator No. 3 was declared inoperable to permit scheduled maintenance as part of Brunswick Unit 2's scheduled refueling outage. At this time the Company had not received written notification from the NRC concerning its request for a 14 day LCO.

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7. Under Brunswick's technical specification, CP&L is allowed to remove one of the two units' four diesel generators from service for seven (7) days under an LCO and continue operation of both units. If, however, an inoperable diesel generator is not returned to service within the LCO, both reactor units must be shutdown.

On October 4, 1991, CP&L personnel completed diesel generator valve adjustments. On October 5, 1991, the NRC granted CP&L's request for a 14 day LCO. Upon completion of maintenance activities, diesel generator No. 3 was started. During post-maintenance operability testing, the Company discovered that there were problems with the diesel generator valve adjustment. On October 15, it became apparent that diesel generator No. 3 could not be returned to an operable condition prior to expiration of the LCO. Accordingly, Brunswick Unit 1 was removed from service.

With the unit out-of-service, the Company began an investigation of the cause of the misadjusted valve. The Company determined that the maintenance mechanic had failed to utilize appropriate procedures during the valve timing during the first week of the maintenance activities. CP&L then decided to conduct a full review of all engine work before declaring the diesel generator operable.

Witness Walsh testified it was his conclusion that the personnel error was the factor which caused the Company to exceed the fourteen (14) day LCO and, therefore, a cause of the unplanned outage.

Company witness Parsons testified that a combination of emergent work and the personnel mistake prevented completion of the diesel generator work within the 14 day LCO. He testified that, even if the personnel error had not occurred, all of the emergent work could not have been completed within the 14 day LCO and, therefore, the personnel error was not the sole cause of the Unit 1

shutdown.

On cross-examination, Parsons testified that if CP&L had received the NRC extension for a 14 day LCO at the beginning of the maintenance, the Company "could have handled the emergent work and the [personnel] mistake". Parsons further stated that, according to CP&L's critical self-assessment, CP&L's request for an extension was filed with the NRC in a untimely manner.

14. Staff witnesses Watts and Walsh testified that, although they found unreasonable actions on the part of CP&L, they did not recommend the Commission disallow the excess fuel replacement costs associated with the Robinson Unit 2 and Brunswick Unit 1 outages. Walsh testified that, during the period under review, CP&L met the four objectives stated in the fuel statute, reliability of service, economical generation mix, comparison of the generating experience of similar facilities, and minimization of the total cost of providing service, and, therefore, it was his opinion that a disallowance not be imposed on CP&L for the Brunswick Unit 1 outage.

Similarly, Watts explained that, for the period under review, he found CP&L's nuclear and fossil plants to be very reliable, that the higher percentage of generation from CP&L's nuclear units led to a more economical generation mix, and that CP&L's nuclear capacity factor exceeded that of the NERC 1990 average by approximately 10%. Accordingly, Watts testified he did not recommend that the Commission disallow any of the replacement fuel costs associated with the August 16 outage at Robinson Unit 2.

15. At the conclusion of the hearing, the Consumer Advocate moved that the Commission disallow all of the excess fuel replacement costs associated with the Robinson Unit 2 and Brunswick Unit 1 outages.

CONCLUSIONS OF LAW

1. Pursuant to S. C. Code Ann.§58-27-865(A)(Supp. 1991), each electrical utility must submit to the Commission its estimated fuel costs for the next six months. Following investigation of these estimates and after a public hearing, the Commission directs each electrical utility "to place in effect in its base rate an amount designed to recover, during the succeeding six months, the fuel costs determined by the Commission to be appropriate for that period, adjusted for the over-recovery or under-recovery from the preceding six month period." Id. (Emphasis Added).

2. South Carolina Code Ann.§58-27-865(F)(Supp. 1991) requires the Commission to allow electrical utilities to recover "all their prudently incurred fuels costs... in a manner that tends to assure public confidence and minimize abrupt changes in charges to consumers."

3. South Carolina Code Ann.§58-27-865(E)(Supp. 1991) specifies as follows:

> The Commission shall disallow recovery of any fuel costs that it finds without just cause to be the result of failure of the utility to make every reasonable effort to minimize fuels costs or any decision of the utility resulting in unreasonable fuel costs, giving due regard to reliability of service, economical generation mix, generating experience of comparable facilities, and minimization of the total cost of providing service.

4. As stated by the Supreme Court in Hamm v. South Carolina Public Service Commission, 291 S.C. 178, 352 S.E.2d 476, 478 (1987), Section 58-27-865(E) requires the Commission "to evaluate the conduct of the utility in making the decisions which resulted in the higher fuel costs. If the utility has acted unreasonably, and higher fuel costs are incurred as a result, the utility should not be permitted to pass along the higher fuel costs to its customers." "[T]he rule does not require the utility to show that its conduct was free from human error; rather it must show it took reasonable steps to safeguard against error." Id. at 478, citing Virginia Electric & Power Co. v. Division of Consumer Counsel, 220 Va. 930, 265 S.E.2d 697 (1980). By Order Nos. 91-636 (August 6, 1991) and 91-762 (September 6, 1991), this Commission specifically ruled that it would apply negligence principles to its determination of whether an electric utility's actions in regard to fuel costs were either reasonable or unreasonable.

5. The Commission recognizes that Section 58-27-865(E) provides it with the authority to consider the electrical utility's reliability of service, its economical generation mix, the generating experience of comparable facilities, and its minimization of the total costs of providing service in determining whether to disallow the recovery of any fuel costs.

6. The major advantage of producing electricity by nuclear power is the relatively low fuel cost for nuclear fueled generating facilities. The cost of generation of electricity is generally composed of costs such as capital, interest, taxes, insurance,

operating and maintenance (O&M) costs, and fuel costs. For fossil fueled plants, the cost of the fuel is a larger portion of the total cost to generate electricity. For nuclear power plants, while the capital and O&M costs are higher compared to fossil fueled plants, the fuel costs are comparatively low. Thus, if the electricity generated by a nuclear plant must be replaced by electricity from a coal or gas fired plant, the Company incurs higher fuel costs. This difference between the fuel cost to generate a quantity of electricity by fossil fuel and the fuel cost to generate the electricity by nuclear fuel is the excess replacement fuel cost.

Brunswick Unit 2 - Scheduled Refueling.

7. As noted previously, during the period under review Brunswick Unit 2 was removed from service for scheduled refueling but was not returned to service by December 31, 1991. The Commission concludes that, in accordance with past practice, it will defer consideration of this outage until the Company's next fuel proceeding.

Robinson Unit 2 Outage - August 16 - 18, 1991.

Brunswick Unit 1 Outage - October 15 - 21, 1991.

8. The Commission finds that, for the period under review, CP&L's overall plant performance was superior. Accordingly, even assuming that negligent actions on the part of CP&L caused the Robinson Unit 2 and Brunswick Unit 1 outages, the Commission concludes it would be improper to prohibit the Company from

recovering its fuel costs associated with the two outages.[8]

The Commission concludes that its decision to allow CP&L to recover these costs is supported by the substantial evidence of record. The only witnesses who testified at the hearing and stated that the Robinson Unit 2 and Brunswick Unit 1 outages were caused by unreasonable actions of the Company also recommended that the Commission allow recovery of the associated fuel costs. These witnesses cited the Commission's authority to give "due regard" to the four statutory objectives and explained their consideration of these objectives.

In further support of its conclusion not to disallow the fuel costs for these two outages, the Commission has compared CP&L's generating experience with other comparable facilities. CP&L's system capacity factor for the Company's nuclear units for the period under review was over 78% as compared to the most recent NERC average of approximately 66%. CP&L's system equivalent availability for its fossil units was 91.8% as compared to the most recent NERC average of 81.6%.

Further, the Commission finds that CP&L's service was very reliable during the period under review. Of the total potential hours available for nuclear operations, only 1.3% were associated with outages arguably caused by unreasonable actions of the

8. The Commission notes that because of its position in regard to the recovery of CP&L's fuel costs, it is unnecessary for it to make a determination as to the reasonableness of the two outages.

Company.[9]

Moreover, the Commission finds that, for the period, CP&L produced an economical generation mix. Approximately 50% of the Company's electric generation was produced from CP&L's nuclear units even though those units represent only approximately 31% of CP&L's installed plant capacity. During the period under review the Company's nuclear fuel costs were approximately 1/4 of its fossil fuel dollar on a cost per kilowatt-hour basis. Therefore, the Commission has determined that CP&L produced electric generation in such a manner which reduced the fuel costs for its customers.

Finally, in regard to the objective of minimizing the total cost of providing service, the Commission recognizes that CP&L had projected that its cost for fuel for August through December 1991 would produce an over-recovery of $1,631,135. In actuality, CP&L collected approximately $2,500,000 more than it had projected. The Commission attributes CP&L's additional over-collection to the fact that its energy costs were less because its nuclear plants produced 50% of the generation, at costs less than its fossil units, for the period.

9. After considering the directives of Section 58-27-865(A) and (F) which require it to place in effect a base fuel cost which

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9. The Commission made this calculation by comparing the total hours available for plant operation during the period (153 days X 24 hours/day X 4 units + 4 hours for Daylight Savings Time = 14,692 hours) with the length of the Robinson Unit 2 and Brunswick Unit 1 outages (193.5 hours).

allows the Company to recover its fuel costs for the next six months, adjusted for the over-recovery or under-recovery from the preceding six month period, in a manner which assures public confidence and minimizes abrupt changes in charges, the Commission has determined that the appropriate base fuel factor for April 1992 through September 1992 is 1.375 cents per kilowatt-hour. The Commission finds that a 1.375 cents fuel component will allow CP&L to recover its projected fuel costs and, at the same time, prevent changes in charges to CP&L's customers.

IT IS THEREFORE ORDERED THAT:

1. The base fuel factor for the period April 1992 through September 1992 is set at 1.375 cents per kilowatt-hour.

2. Within ten (10) days of the date of this Order, CP&L shall file with the Commission for its approval, rate schedules designed to incorporate the findings herein and an Adjustment for Fuel Costs as demonstrated by Appendix A.

3. CP&L shall fully respond to discovery from all parties and from the Commission Staff in an open and expeditious manner in all proceedings before this Commission.

4. This Order shall remain in full force and effect until further Order of the Commission.

BY ORDER OF THE COMMISSION:

Marjorie Amos-Frazier
Chairman

ATTEST:

Executive Director

(SEAL)

CAROLINA POWER AND LIGHT COMPANY
Adjustment for Fuel Costs

APPLICABILITY

This adjustment is applicable to and is a part of the Utility's South Carolina retail electric rate schedules.

The Public Service Commission has determined that the costs of fuel in an amount to the nearest one-thousandth of a cent, as determined by the following formula, will be included in the base rates to the extent determined reasonable and proper by the Commission for the succeeding six months or shorter period:

$$F = \frac{E}{S} + \frac{G}{S_1}$$

Where:

F= Fuel cost per Kilowatt-hour included in base rate, rounded to the nearest one-thousandth of a cent.

E= Total projected system fuel costs:

(A) Fuel consumed in the Utility's own plants and the Utility's share of fuel consumed in jointly owned or leased plants. The cost of fossil fuel shall include no items other than those listed in Account 151 of the Commission's Uniform System of Accounts for Public Utilities and Licensees. The cost of nuclear fuel shall be that as shown in Account 518 excluding rental payments on leased nuclear fuel and except that, if Account 518 also contains any expense for fossil fuel which has already been included in the cost of fossil fuel, it shall be deducted from this account.

PLUS

(B) Purchased power fuel costs such as those incurred in unit power and Limited Term power purchases where the fuel costs associated with energy purchased are identifiable and are identified in the billing statement.

PLUS

(C) Interchange power fuel costs such as Short Term, Economy, and other where the energy is purchased on economic dispatch basis.

Energy receipts that do not involve money payments such as Diversity energy and payback of storage energy are not defined as purchased or interchange power relative to this fuel calculation.

MINUS

(D) The cost of fuel recovered through intersystem sales including the fuel costs related to economy energy sales and other energy sold on an economic dispatch basis.

Energy deliveries that do not involve billing transactions such as Diversity energy and payback of storage are not defined as sales relative to this fuel calculation.

S = Projected system kilowatt-hour sales excluding any intersystem sales.

G = Cumulative difference between jurisdictional fuel revenues billed and fuel expenses at the end of the month preceding the projected period utilized in E and S.

S_1 = Projected jurisdictional kilowatt-hour sales for the period covered by the fuel costs included in E.

The appropriate revenue related tax factor is to be included in these calculations.

The fuel costs (F) as determined by Public Service Commission of South Carolina Order No. 92-215 for the period April 1992 through September 1992 is 1.375 cents per kilowatt-hour.